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Specification for Ductile Iron Chainwheels, Chain-Levers and Safety Restraints

1. Chainwheels

- a. All valves with centerlines more than 6 feet above the floor shall be provided with chainwheels. The chain of each chainwheel shall be looped to extend to within 4 feet of the floor. Valves shall be installed horizontally, or provided with geared operators to position chainwheels in the vertical position. The manual overrides of motor operated valves shall be equipped with chainwheel operators, if the centerline of the valve is more than 6 feet above the floor.
- b. Materials of Construction: The chainwheel shall be cast from ductile iron, grade 65-45-12 and will be the sprocket type design.
- c. Chain shall be the single loop type, of stainless steel type 316. The chain shall be calibrated to fit on the sprocket teeth of the chainwheel. Chain loops shall be made with connecting links provided by the manufacturer of the chainwheel and chain.
- d. Chain Retaining Device: Provide a chain retaining device to hold the chain above the walking area during non-use. The retaining device shall be polypropylene and safety orange.
- e. Safety Restraint Device: The top half of the chain guide shall have a boss and tap to permit installation of a chainwheel safety restraint system, as specified below. A safety restraint system shall be installed on each chainwheel, in accordance with the installation instructions of the manufacturer.
- f. Chainwheels, chain and safety restraint system shall be as manufactured by Trumbull Industries, or engineer approved equal.

2. Chain-Levers for Valves with Quarter Turn Lever Operators

- a. All quarter turn valves with centerlines more than 6 feet above the floor shall be provided with chain-levers.
- b. Materials of Construction: The chain-lever shall be cast from ductile iron, grade 65-45-12.
- c. Chain shall be plated welded machine chain.
- d. Chain Retaining Device: Provide a chain retaining device to hold the chain above the walking area during non-use. The retaining device shall be polypropylene and safety orange.
- e. Safety Restraint Device: The chain-lever shall have a boss and tap to permit installation of a safety restraint system, as specified below. A safety restraint system shall be installed on each chain-lever, in accordance with the installation instructions of the manufacturer.

3. Chainwheel Safety Restraint System

The Safety Restraint System shall be designed to protect the personnel operating an overhead valve, in the event the chainwheel assembly should separate from the valve and fall to the ground.

All components shall be type 316 stainless steel, including the eye-bolt, wire rope cable and cable clips. The cable shall be a minimum of 7 x 19, 1/4" in diameter. The cable must not be



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plastic coated, nor sheathed, and must be fastened with cable clips, not by swaged fittings. A total of 4 cable clips shall be used on each restraint, two clips fastening each end of cable.

The eye-bolt shall be appropriately sized for the application and shall be threaded into the top half of the chainwheel safety guide. A locking jam nut must be used to secure the eyebolt to the Safety Restraint Cap.

The manufacturer must provide supporting evidence of a successful drop test of the Safety Restraint System, based on a 200 # drop, from a length of 4 feet.

Chain-lever, chain and safety restraint system shall be as manufactured by Trumbull Industries, or engineer approved equal.